

CAMP ROBERTS REAL PROPERTY DEVELOPMENT PLAN LONG-RANGE COMPONENT

ENVIRONMENTAL BASELINE

GEOLOGY, TOPOGRAPHY, AND SOILS

The Camp Roberts Maneuver Training Center (MTC) is located within the California Coast Ranges of the Pacific Border physiographic province. The province consists of a series of fault systems that parallel the camp, mountain ranges, and valleys. Situated in the southern portion of the Salinas River Valley, the camp is bordered by the Santa Lucia Mountains and rolling hills.

TOPOGRAPHY

The topography of Camp Roberts includes ridgelines, dissected canyons, slopes, valleys, and broad, flat river channels that make up the low plains on the installation. The main cantonment and East Garrison lie on low plains in the southern portion of the Salinas River Valley. Elevations in these areas range from 600 to 800 feet above sea level, and the average slope gradient is less than 10 percent. Soils located within the project area primarily have been transported from other areas, most likely through erosion and sedimentation. These soils have accumulated over solid geologic formations and vary in age.

GEOLOGIC DEPOSITS / FORMATIONS

The geology of the main cantonment and East Garrison consists of Cenozoic rocks of the Paso Robles formation. There are two distinct deposits underlying the study area. The majority of the cantonment is composed of older, nonmarine sedimentary deposits including conglomerate, sandstone, shale, and some limestone. In the low-lying riverbeds, streambeds, and portions of the industrial area, Quaternary stream deposits less than 2 million years old and consisting of unconsolidated gravel, sand, clay, and silt overlie the Paso Robles formation.

SOILS

Soil surveys for Camp Roberts were conducted in 1978 by Monterey County and in 1983 by San Luis Obispo County. Human activities on the main cantonment and East Garrison would not change most soil types except where substantial placement of fill or excavation and removal of native soil occurred.

Soils in the alluvial terraces, fans, plains, and floodplains formed in alluvium from mixed-rock sources. The soils on the alluvial plains, alluvial fans, and floodplains are typically very deep, with level to moderate slopes. Soils are characterized as well drained to somewhat excessively drained clay loams, silty clays, loams, loamy sands, sandy loams, gravelly loams, and stratified sandy, gravelly, and cobbly sediments. These soils generally have little soil expansion or shrink-swell potential due to low clay content.

The major soil types within the main cantonment and East Garrison project area can be classified into 11 categories. The following descriptions are typical characteristics for that particular soil series.

Lockwood Shaly Loam. The solum is more than 40 inches thick. Soil that formed in alluvial material from dominantly siliceous shales is well drained. Lockwood soils are on alluvial fans and bench terraces and have slopes of 0 to 15 percent. Rock fragments, mostly pebble sized, make up 15 to 35 percent of the soil between depths of 10 to 40 inches and 15 to 60 percent below 40 inches.

Chular – Arbuckle Complex. Soils that formed in alluvial materials from mixed-rock sources are very deep and well drained. Chular soils are on terraces and fans of the coastal areas and have slopes of 0 to 9 percent. Soil characteristic is mainly sandy loam to loam, or sandy clay loam at deeper depths. Base saturation is more than 75 percent throughout.

Placentia Complex. The Placentia series is a member of the fine, monomorphonic, thermic family of Typical Natriferalfs. Typically, soils have brown, medium acid, sandy loam from 0 to 13 inches. Between 13 and 58 inches, the soil is dark reddish-brown clay and heavy sandy clay loam with prismatic structure. Below 58 inches is a strong brown, gravelly sandy loam.

Arbuckle – Positas Complex. Soils in this complex consist of deep and very deep, moderately well-drained soils that formed in alluvial material from mixed rock sources. These soils are located along stream terraces and have slopes of 2 to 75 percent. Soil characteristics for this complex range from sandy loam to silt loam and clay to gravelly clay at deeper depths.

Greenfield Fine Sandy Loam. These soils consist of deep, well-drained soils that formed in moderately coarse and coarse-textured alluvium derived from granitic and mixed-rock sources. These soils are located on alluvial fans and terraces and have slopes of 0 to 30 percent. Soil characteristics range from sandy loam to loamy sand throughout the horizons.

Garey Complex. Garey soils are brown, with medium and strong acid, sandy loam (0 to 27 inches in depth); light brown, sandy loam (27 to 57 inches in depth); reddish clay bands and loamy sand (58 to 78 inches in depth); and sandy soil below 78 inches.

Linne Complex. Soils consist of moderately deep, well-drained soils that formed in material weathered from fairly soft shale and sandstone. Linne soils are found on hills that have slopes from 5 to 75 percent. Except in transitional horizons to the paralithic contact, the soil is clay loam or silty clay loam throughout, with more than 15 percent fine sand or coarser.

Elder Gravelly Loam. This series of soils consists of very deep and deep, well-drained soils that formed in alluvial material derived from mixed-rock sources. Elder soils are located on alluvial fans and in floodplains and have slopes of 0 to 15 percent. Soil characteristics range from fine sandy loam to light loam and have less than 18 percent clay.

Nacimiento Silty Clay Loam. Soils consist of moderately deep, well-drained soils that formed in material weathered from calcareous shale and sandstone. This type of soil is usually found on rolling hills and has mostly complex slopes of 9 to 75 percent. From the surface to nearly the paralithic contact (20 to 40 inch depths) the soil is loam, clay, or silty clay loam with 25 to 35 percent clay. Deeper depths have few to many fine filaments and soft masses of lime.

INSERT FIGURE 1
SOIL TYPES AND ERODIBILITY POTENTIAL

Sorrento Clay Loam. These soils consist of very deep, well-drained soils that formed in alluvium mostly from sedimentary rocks. Sorrento soils are on alluvial fans and stabilized floodplains and have slopes of 0 to 15 percent. At 10 to 40 inches in depth, soils range from fine sandy loam, loam, clay loam, sandy clay loam, or silty clay loam, with 18 to 35 percent clay.

Balcom – Nacimiento Complex. Soils consist of moderately deep, well-drained soils that formed in material that weathered from soft calcareous shale and sandstone. Soils are on uplands and have slopes of 5 to 75 percent. The soil profile is loam, silt loam, clay loam, or silty clay loam in all horizons.

ERODIBILITY

Erosion susceptibility on Camp Roberts is characterized as low to high. The level of erodibility is largely determined by the degree of slope. The areas most susceptible to erosion contain moderate to severe slopes and lie mainly in the impact area and southern portion of the camp. Since much of the project area is covered in pavement, on-site erosion is minimal. Underlying soils are considered to have slight to moderate erosion potential. However, the streams that drain the area off site are susceptible to higher erosion rates.



Photo 1
EROSION ALONG THE 7000 BLOCK

SEISMICITY

Camp Roberts is in a region of moderate to high level of seismic activity. The camp is bracketed by the active San Andreas Fault zone, which passes approximately 20 miles to the east, and the potentially active Riconada fault system to the west. The Riconada system is a highly-faulted right-lateral strike-slip system, which includes major faults such as the Jolon, San Antonio, Espinosa, San Marcos (Paso Robles), and Nacimiento. Since 1830, the region has experienced one major earthquake over a magnitude 8.0 on the Richter scale, one of Richter magnitude 7.0, and two that equaled or exceeded magnitude 6.0. The San Marcos (Paso Robles) and Jolon faults pass through the installation's southwest portion, and the San Antonio and Espinosa faults pass to the northwest. The fault system extends from the Santa Margarita Lake in San Luis Obispo through the Coastal Ranges to Monterey Bay.

The camp is identified in Seismic Risk Zone III according to the United States Geological Survey map of the United States seismic risk zones. Seismic Risk Zone III has the ability to generate an earthquake intensity of VII and higher on the Modified Mercalli scale. The Modified Mercalli scale is a descriptive method consisting of 12 levels of intensity denoted by Roman Numerals (refer to Table 1). The probable damage from an earthquake in this region could be major.

TABLE 1
MODIFIED MERCALLI INTENSITY SCALE (ABRIDGED)

Level	Description
I	Not felt except by a few under especially favorable circumstances.
II	Felt by only a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeably indoors; especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing vehicles may rock slightly. Vibration similar to passing of truck. Duration estimated.
IV	During the day, felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, and doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing vehicles rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes and windows broken, and so forth; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all; many are frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built, ordinary structures; considerable in poorly-built or badly-designed structures; some chimneys broken. Noticed by persons driving vehicles.
VIII	Damage slight in specially-designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly-built structures. Panel walls thrown out of frame structures. Chimneys, factory stacks, columns, monuments, and walls fall. Heavy furniture overturned. Disturbs persons driving vehicles.
IX	Damage considerable in specially-designed structures; well-designed frame structures thrown out of plumb; damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed, along with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.
XI	Few, if any (masonry), structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII	Damage total. Waves seen on ground surface. Lines of sight and level distorted. Objects thrown upward into air.

Source: FEIS / FEIR Camp Roberts

In addition to the Modified Mercalli scale, seismic risk is identified in the Uniform Building Code (UBC). Camp Roberts is located within Zone 4, the highest risk zone, of the 1988 UBC Seismic Zone Map. The building code indicates that major damage could result from ground shaking due to a moderate or major earthquake in the vicinity of Camp Roberts.

Alluvial soils located in the floodplains of the Nacimiento and Salinas Rivers may be prone to liquefaction during earthquake events. Liquefaction is the sudden loss in soil strength or stability, which results in the temporary fluid-like behavior of the soil. Structural failure occurs when the soil liquefies and can't support the weight of the structure.

Soil types ranging from loams to sands mixed with gravel and clay underlie the main cantonment. Only a small portion of the cantonment is underlain by sandy soils, which could liquefy under severe ground-shaking conditions.

IMPACTS AND ACTIONS

Soils do not impact the redevelopment of the main cantonment and East Garrison significantly. Good planning and design can overcome development limitations due to soil characteristics. Development may increase erosion in areas that are susceptible, especially the streams and natural drainage courses. Revegetation, check dams, or rock-lined streambeds would minimize erosion.

HYDROLOGY / WATER RESOURCES

SURFACE WATER

There are three perennial rivers that traverse Camp Roberts: the Salinas River and its tributaries, the Nacimiento River, and the San Antonio River. The Salinas River is a broad, sandy-bottom river that extends 155 miles through central California to Monterey Bay. Water flow in the Salinas River is mainly subsurface; the river is considered the largest submerged river in the United States.

The Salinas River flows northwest through the camp and divides the main cantonment and the East Garrison. The Nacimiento River flows northeast across the installation to its confluence with the Salinas River. The San Antonio River borders the installation to the north and merges with the Salinas River north of the installation.

The Salinas River's natural hydrology has not been drastically altered by the construction of Camp Roberts. Most of the drastically altered portion is due to upstream dams and county and railroad bridges. Tank crossings, bridge construction, and flood control structures have affected some of the river's dynamics. Water supply and flood control dams have been constructed on the Nacimiento and San Antonio Rivers, creating two reservoirs. Both reservoirs are owned and operated by the Monterey County Flood Control and Water Conservation District, even though the Nacimiento Reservoir is located in San Luis Obispo County. The flow of the Salinas River during summer is regulated by the release of water from the two dams.



Photo 2
NACIMIENTO RIVER

There are no naturally occurring lakes on the installation; however, in the southern section of the camp near the cantonment area, there have been several check dams constructed. These dams were originally constructed to control erosion, but some retain water for most of the year. Three known springs occur naturally on Camp Roberts. There are no natural springs or wetlands within the project area.

The existing stormwater drainage system within the project area flows into either the Salinas River or the Nacimiento River. Stormwater on the main cantonment is collected by a series of streams and a stormwater collection system. One stream creates a natural division between the battalion blocks and the DOL area. Another stream crosses the southern section of the DOL area. All streams flow into the Salinas River. Additional smaller drainage courses on the northern edge of the main cantonment drain into the Nacimiento River. On the East Garrison, stormwater is collected by an open lined ditch and natural streams, or drainage courses, which flow into the Salinas River.

INSERT FIGURE 2
Surface Water Features

GROUNDWATER

The majority of Camp Roberts overlies the Paso Robles groundwater basin. The Paso Robles basin is considered one of the largest groundwater basins in central California. The eastern edge of the basin is bounded by the San Andreas Fault and conforms to a northwest-southeast alignment with a series of faults. The northern boundary is halfway between the cities of San Ardo and Bradley in the Salinas Valley. Groundwater under the main cantonment generally flows in a northerly direction toward the Salinas and Nacimiento Rivers confluence.

Predominate use of groundwater for the region is agricultural purposes. The aquifer is also used for municipal and domestic drinking water. Camp Roberts is dependent on the aquifer as their sole source for potable water. Wells average in depth from 600 to 700 feet and pierce through the overlying Paso Robles Formation, even though there is water within the formation. However, the water quality in the formation is regularly poor and susceptible to contamination from local land uses and is not used by the installation.

Current water facilities on the installation are estimated to produce roughly 2,500 gallons per minute (gpm) for 18 hours. Available water is not a limiting factor; however, the current equipment does not provide sufficient water supply capacity for the installation's expansion. There are several good sites on the installation for drilling new wells.

The estimated recharge rate for the Paso Robles aquifer is 47,000 acre-feet per year. Presently, the current recharge rate is approximated below the annual rate. The majority of recharge occurs near the mountainous areas with coarse sediments. Natural recharge accounts for the bulk of water primarily by deep percolation from streams flowing across the valley. In addition, precipitation, irrigation, and treated wastewater also furnish groundwater recharge.

WATER QUALITY

Camp Roberts falls under the jurisdiction of the Central Coast Region (Region 3) Regional Water Quality Control Board (RWQCB) of the State Water Resources Control Board. A Water Quality Control Plan for the Central Coast Basin was adopted by the RWQCB in 1975. Within the plan are policies and strategies protecting beneficial uses of the regional water supply. Beneficial uses of groundwater in the Camp Roberts vicinity include agricultural water supply, industrial water supply, and domestic water supply. Beneficial uses of the Salinas River in the Camp Roberts area include: agricultural water supply, industrial water supply, domestic water supply, groundwater recharge, water contact and nonwater contact recreational uses, wildlife habitat, warm freshwater habitat, and fish migration. The RWQCB also issues permits for stormwater discharges from storm sewer systems, industrial sites, and construction sites that affect more than five acres.

SURFACE WATER. Water quality of the Salinas River is monitored 7 miles downstream from Bradley in Monterey County. Water quality is generally considered acceptable for the majority of beneficial uses identified by the RWQCB. The water quality ordinarily reflects the minerals of the watershed, calcium, and sodium. However, the levels for total dissolved solids and selenium are approaching the maximum acceptable levels set by the RWQCB and the Environmental Protection Agency (EPA).

In 1997, Camp Roberts initiated a surface water-monitoring program in accordance with the installation's Stormwater Pollution Prevention Plan (SWPPP). The plan requires the installation to sample water where the San Antonio, Nacimiento, and Salinas Rivers enter and exit the

installation boundaries. The samples record the pH, temperature, conductivity, oil and grease, nitrogen, and various metals.

North of Camp Roberts, a raised level of bacterial counts and pesticides are prevalent, which reflect the use of the river as a discharge receiver for domestic wastewater and adjacent agricultural land uses. Camp Roberts' sewage treatment plant is located east of the main cantonment, along the Salinas River. However, the effluent from the plant is discharged and retained in clay-lined evaporation ponds, resulting in no effluent entering the river. The plant is classified as a "zero discharge" facility.

Since the sewage treatment plant does not discharge effluent into waterways of the United States, it does not require a National Pollution Discharge Elimination System (NPDES) permit. The plant is operating under Order Number 80-36 issued by the RWQCB. The permit stipulates the plant to operate with zero discharge and maximum treatment volume of one million gallons per day. The RWQCB monitors surface effluent twice a year.

The training site Stormwater Pollution Prevention Plan (SWPPP) will be an important guide over the next five years to protect the installation's water quality. The SWPPP primarily lists best management practices (BMPs) relating to industrial activities, but also includes BMPs for erosion control.

GROUNDWATER. The quality of groundwater is generally acceptable for its designated beneficial uses. In the past, contamination or unacceptable levels for various contaminants have been detected in the groundwater.

In 1975, high levels of fecal coliform bacteria were detected. The Nacimiento River was sampled, showed high levels of coliform counts, and was determined to be the source. The camp now has to treat the pumped groundwater with chlorine prior to domestic use. There are several chlorine treatment facilities near the main cantonment and East Garrison.

Well W-6, located northwest of the main cantonment, has been closed since measuring unacceptable levels of radioactivity. The radioactivity is believed to derive from a deep bed of solubilized uranium-bearing ore.

A leaking underground storage tank (UST) was discovered near building 936. Remediation of the site for petroleum contamination was completed in 1998 and approved by San Luis Obispo County. Remaining contamination is contained within a perched aquifer above the Paso Robles Groundwater Basin. Due to the seismic activity in the area, a potential contamination hazard exists if the perched aquifer cracks and contamination migrates into the underlying aquifers.

Sampling and monitoring wells located up and down gradient of the active landfill and the adjacent inactive portions indicate the landfill is leaking leachate. The Solid Waste Assessment Test (SWAT) Final Report of May 1991 identifies the landfill for leaking volatile organic compounds (VOCs) and synthetic semiorganic compounds (SVOCs) and metals. Metals and SVOCs have been detected in groundwater and several VOCs and metals have penetrated the vadose zone. Bis (2-ethylhexyl) phthalate and aluminum exceed primary maximum contamination levels (MCLs), and iron and manganese exceed secondary MCLs in groundwater.

Thirty groundwater-monitoring wells have been located at potential sources of contamination, such as the landfill and wastewater treatment plant. A number of test wells have been placed near remediation sites, such as the fuel facility and building 936, where UST's have been removed.

Most wells are monitored quarterly. The wells located near the wastewater treatment plant are monitored monthly under regulations by the RWQCB.

FLOODPLAIN

There are no developed areas within the 100-year floodplains of the Salinas or Nacimiento Rivers. The rivers are broad sandy bottoms with riparian vegetation along the riverbanks. The 100-year floodplain does not negatively limit the future redevelopment of the main cantonment or improvements to the East Garrison.

WETLANDS

Wetland protection is crucial for compliance with Executive Order 11990, *Protection of Wetlands*. Section 404 of the Clean Water Act (CWA) and NEPA / CEQA are the means by which impacts to surface waters and wetlands are evaluated.

There are no identified wetlands on the developed area of the main cantonment or East Garrison. However, wetlands that may be impacted are located along or in the Salinas and Nacimiento Rivers. It is recommended that the installation follow the wetlands protection provisions identified in the 1998 *Integrated Natural Resources Management Plan* (INRMP). The INRMP is still in draft form and currently is not implemented.

IMPACTS AND ACTIONS

While the hydrologic regime of the local rivers is expected to change little as a result of the redevelopment of the main cantonment and East Garrison, the peak storm-runoff flows are expected to increase with additional impervious surfaces and the potential for significant erosion. The increased erosion may increase nutrient loading into local streams. This would increase the biological oxygen demand while decreasing the dissolved oxygen and alter the banks and beds of the receiving streams which eventually discharge into the Salinas or Nacimiento Rivers.

Mitigation measures will need to address the increase in runoff and potential erosion and negate any significant impact on the area hydrology. Revegetating natural drainage channels, check dams, and retention ponds can be used to negate significant impact. Oil / water separators can be installed to reduce the impact of impervious surfaces on stormwater-runoff impacts on water quality.

The redevelopment of the main cantonment and East Garrison will draw more water from the Paso Robles groundwater basin. The basin is already in a state of overdraft. Camp Roberts should impose the existing water conservation measures outlined in the INRMP and pursue the possibility of water recycling. A study to upgrade the existing water treatment plant for water recycling capability is highly recommended.

BIOLOGICAL RESOURCES

HABITATS AND WILDLIFE

A multitude of habitats on Camp Roberts support a diverse range of wildlife. In spite of that, the main cantonment and East Garrison are considered barren of any natural habitat. Although the developed areas have severely altered the natural habitat, wildlife has adapted to life within or near the buildings. Many animals have taken up residency in or under abandoned buildings. An emerging awareness of managing wildlife in developed / urban areas has created new opportunities for wildlife management within Camp Roberts main cantonment and East Garrison.

Potentially impacted habitats surrounding the main cantonment and East Garrison include grasslands (native or non native), riparian, and oak woodland. The following figure identifies the main cantonment and East Garrison surrounding habitats.

INSERT FIGURE 3
POTENTIALLY IMPACTED HABITATS

GRASSLANDS (NATIVE AND NON-NATIVE)

Grasslands provide animals with foraging opportunities. Moreover, some animals need special habitat features, such as cliffs, caves, and stands of woody plants for breeding, resting, and escape cover. Typical reptiles that breed in grasslands are the western fence lizard, the common garter snake, and the western rattlesnake. Grasslands support a variety of mammals including the California ground squirrel, deer mouse, black-tailed hare, and mule deer. Carnivores, such as the San Joaquin kit fox, coyote, and bobcat prey on these animals. In addition, birds, such as the western meadowlark, burrowing owl, and savanna sparrow, are known to breed in the grasslands.

Grasslands encompass both the main cantonment and the East Garrison project areas. Plants on the main cantonment between the abandoned World War II buildings have grown to resemble grasslands. Within these grasslands live ground squirrels, deer mouse, black-tailed hare, bobcat, and kit fox. Under some of the World War II buildings kit foxes have constructed dens.



Photo 3
BOBCAT FORAGING IN MAIN CANTONMENT

RIPARIAN

Riparian habitats support the largest diversity of wildlife on Camp Roberts. This habitat type is found along or in the Salinas and Nacimiento Rivers and floodplains. Riparian habitat provides cover for a number of species, nesting and roosting sites, migratory routes, thermal cover, and water and feeding opportunities. Many species rely on open waterways for their existence and therefore are found exclusively in riparian habitats.



Photo 4
RIPARIAN HABITAT

At Camp Roberts, reptiles, such as the western pond turtle and amphibians like the bullfrog live, breed, and feed in riparian habitat. Raccoons forage for food in the river, while other animals use riparian habitats as corridors to move from one area to another. Wading birds, such as the great blue heron, great egret, and black-crowned night heron, require bodies of water for foraging. Other birds, which forage by fishing, include the osprey, belted kingfisher, and the migratory bald eagle.

Riparian habitats have declined dramatically in recent years in California, raising concerns about dependant plant and animal species. The State of California's Department of Fish and Game has adopted a "no net loss" policy for riparian habitat. The U.S. Fish and Wildlife Service mitigation policy identifies California's riparian habitats in resource Category 2, which recommends a "no net loss" policy for riparian habitat.

OAK WOODLANDS

Oak woodlands could potentially be impacted along the western edge of the main cantonment and the area dividing the MATES and airfield on the East Garrison. Oak woodlands provide some of the highest-quality habitat for California's special status species. Many of the oaks are 100 to 300 years old and serve as an indicator to the area history.



Photo 5
OAK WOODLANDS ADJACENT TO MAIN
CANTONMENT

The habitat is valuable for a number of species for foraging, nesting, perching, escape cover, thermal cover, and feeding. Several bird species are present in oak woodlands including wild turkey, various woodpeckers, yellow-rumped warblers, and occasionally, band-tailed pigeons. Raptors, such as the red-tailed hawk and American kestrel, use the woodlands for breeding, nesting, and perching while hunting small mammals in nearby grasslands. Mammals present include the deer mouse, dusky-footed woodrat, and raccoon, which use the area for foraging, denning, and escape cover.

Land conversion into urbanization, agriculture, and range development has contributed to the decline of oak woodlands. This loss has led the California Department of Forestry and Fire Protection, the California Native Plant Society (CNPS), and The Nature Conservancy to identify conservation and management of oak woodlands as issues of importance. Furthermore, the California State Senate passed a resolution identifying the conservation of oak woodlands as a priority of state agencies when authorizing and approving projects. Oak woodlands and other native tree cover are identified and tracked by the Camp Roberts Environmental Office. Losses of native tree species must be mitigated by replacement with appropriate native tree species.

PLANT COMMUNITIES AND ASSOCIATED WILDLIFE

The dominant plant communities near the project area include grasslands, a number of oak woodlands, and riparian zones. The main cantonment and the East Garrison are a mixture of native and non-native grasslands, shrubs, and native trees intermingled with ornamental landscaping adjacent to buildings. There are no distinct natural plant communities on the main cantonment or East Garrison developed areas. For this project, therefore, the areas are characterized as barren or developed.

The following plant communities table is a summary of various vegetation and wildlife in the three potentially impacted sensitive plant communities near the project area at Camp Roberts.

Table 2
PLANT COMMUNITIES AND ASSOCIATED WILDLIFE

Community	Vegetation	Wildlife
Grasslands	Slender wild oats, brome grasses, fescue, purple needlegrass, goldfields	California ground squirrel, deer mouse, black-tailed hare, San Joaquin kit fox
Riparian	Western sycamore, valley oak, box elder, elderberry, Fremont cottonwood, willow species, coyote brush and mule fat	California quail, wood duck, redshouldered hawk, tule elk, southwestern pond turtle, and bald and golden eagles
Oak woodlands	Valley oaks, coast live oak, blue oak, grasses, and forbs	American kestrel, gray fox, bobcat, mule deer, band-tailed pigeon, San Joaquin kit fox

SPECIAL – STATUS SPECIES

Special-status species are those species listed that are candidates for listing as threatened, endangered, or species of special concern in accordance with the federal and / or state Endangered Species Act. In addition, the CNPS publishes a list of rare and endangered native California flora. The California Natural Diversity Database Surveys for special-status species are relatively complete with the exception of a special-status plant species survey, which is to be completed within the next 4 years. The most biologically important botanical resources at Camp Roberts are its riparian and oak woodlands. These plant communities support the ecological base of the food-chain network for wildlife. However, the native and nonnative grasslands support several sensitive species including the endangered San Joaquin kit fox. This section will focus solely on the special-status species recognized by the federal, state, and local governments.

PLANT SPECIES

The postwide inventory survey for special-status plant species did not specifically search for individual species. Rather, the survey focused on vegetation type for all species. The planned special-status species survey will initially address species that are most likely to occur in a specific area. Sampling will include federally, as well as state, and CNPS-listed species.

SPECIAL PLANTS. “Special Plants” is a broad term used to refer to all the plant taxa inventoried by the Department of Fish and Game’s Natural Diversity Database (NDDDB), regardless of their legal or protection status. Special plant taxa are species, subspecies, or varieties that fall into one or more of the following categories:

- Officially listed by California or the Federal Government as Endangered, Threatened, or Rare;
- A candidate for state or federal listing as Endangered, Threatened, or Rare;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) guidelines;
- A Bureau of Land Management, U.S. Fish and Wildlife Service, or U.S. Forest Service Sensitive Species;

- Taxa listed in the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California;
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California; and
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old-growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, vernal pools, etc.).

The following table lists the special-status plant species known to occur or that could potentially occur on the project area or potentially impacted habitats. However, not all plant special-status species listed occur on the project area or potentially impacted habitats.

**TABLE 3
KNOWN AND POTENTIAL SPECIAL-STATUS PLANT SPECIES**

Common Name	Status (Federal/State/CNPS)	Habitat
Species Known to Occur at Camp Roberts		
Jones' bush mallow	-/-/4	Oak woodland
Paso Robles Navarretia	-/-/4	Grassland
San Benito poppy	-/-/4	Oak woodland, grassland
Shining Navarretia	-/-/1B	Grassland
Small-flowered gypsum-loving Larkspur	-/-/4	Oak woodland
Potential Species at Camp Roberts		
Black-flowered figwort	SC/-/1B	Riparian scrub
Caper-fruited tropidocarpum	SC/-/1A	Grassland
Jones's layia	SC/-/1B	Grassland
Large-flowered linathus	-/-/4	Oak woodland, grassland
Oval-leafed snapdragon	-/-/4	Oak woodland, grassland
Pale-yellow layia	SC/-/1B	Oak woodland, grassland
Pismo clarkia	E/R/1B	Grassland
Purple amole	C/-/1B	Grassland
Salinas Valley goldfields	-/-/4	Oak woodland, grassland
Stink bells	-/-/4	Grassland

Federal classification code:

- C= Candidate for federal listing. The candidate category includes species for which USFWS has on file sufficient information on biological vulnerability and threat to support proposals to list them, but issuance of a proposal is precluded (formerly Category 1 candidate for federal listing).
- E= Listed as endangered under the federal Endangered Species Act (ESA).
- SC= Species of concern (formerly Category 2 candidate for federal listing).
- = No designation.

State classification code:

- R= Listed as rare under the California ESA. This category is no longer used for newly-listed plants, but some plants previously listed as rare retain this designation.
- = No designation.

CNPS classification code:

- 1A= List 1A species: presumed extinct.
1B= List 1B species: rare, threatened, or endangered in California and elsewhere.
4= List 4 species: plants of limited distribution.

ANIMALS

To date, Camp Roberts has identified 33 special-status species on the training site. Three of the species are federally protected, 28 are either state species of special concern or fully protected state species, and one is a great blue heron rookery, which is considered a “special animal” by the California Department of Fish and Game. In addition, there are 13 special-status species that could potentially occur on Camp Roberts.

Not all species exist or are prevalent within the project area of the main cantonment or East Garrison. However, there are special-status species within the project area including the San Joaquin kit fox, vernal pool fairy shrimp, and various birds of prey that use the area for foraging. Furthermore, there are species that could potentially occur within the project area.

The following table lists all special-status animal species that are known to occur or could potentially occur on the project area or potentially impacted habitats at Camp Roberts.

TABLE 4
KNOWN AND POTENTIAL SPECIAL-STATUS ANIMAL SPECIES

Common Name	Status (Federal/State)	Habitat
Species Known to Occur at Camp Roberts		
Crustaceans		
Vernal pool fairy shrimp	T/–	Vernal pools, open water
Fish		
Pacific Lamprey	–/SSC	Riparian (freshwater streams)
Amphibian		
Western spadefoot toad	–/SSC	Seasonal wetlands
Reptiles		
Silvery legless lizard	–/SSC	Oak woodland
California horned lizard	–/SSC	Grassland
San Joaquin whipsnake	–/SSC	Oak woodland
Birds		
Long-billed curlew	–/SSC	Grassland
Golden eagle	–/SSC, FP	Grassland, oak woodland
Bald eagle	T/E	Riparian
Osprey	–/SSC	Riparian
Cooper’s hawk	–/SSC	Riparian, oak woodland
Sharp-skinned hawk	–/SSC	Grassland, riparian, oak woodland
Northern harrier	–/SSC	Grassland
Ferruginous hawk	SC/SSC	Grassland
Prairie falcon	–/SSC	Grassland
White-tailed kite	–/FP, SA	Grassland, riparian, oak woodland
Burrowing owl	SC/SSC	Grassland
Long-eared owl	–/SSC	Riparian
Great blue heron (rookery)	–/SA	Riparian
California horned lark	–/SSC	Grassland

TABLE 4
KNOWN AND POTENTIAL SPECIAL-STATUS ANIMAL SPECIES

Common Name	Status (Federal/State)	Habitat
Loggerhead shrike	–/SSC	Grassland, oak woodland (open)
Yellow warbler	–/SSC	Riparian
Yellow-breasted chat	–/SSC	Riparian
Mammals		
Pallid bat	–/SSC	Grassland
Greater western mastiff bat	SC/SSC	Grassland
San Joaquin kit fox	E/T	Grassland, oak woodland
Yuma myotis	SC/–	Grassland, riparian, oak woodland
Salinas pocket mouse	SC/SSC	Grassland
American badger	–/SSC	Grassland, oak woodland
Potential Species at Camp Roberts		
Amphibians		
California tiger salamander	C/SSC	Grassland, oak woodland
California red-legged frog	T/SSC	Riparian
Reptiles		
Two-striped garter snake	SC/SSC	Riparian
Birds		
Merlin	–/SSC	Grassland
American peregrine falcon	E/E	Grassland
Least Bell's vireo	E/E	Riparian
Tricolored blackbird	SC/SSC	Grassland
Mammals		
Townsend's western big-eared bat	SC/SSC	Roosts in buildings
Ringtail	–/FP	Riparian

Federal classification code:

- C= Candidate for federal listing. The candidate category includes species for which USFWS has on file sufficient information on biological vulnerability and threat to support proposals to list them, but issuance of a proposal is precluded (formerly Category 1 candidate for federal listing).
E= Listed as endangered under the federal Endangered Species Act (ESA).
T= Listed as threatened under the federal ESA.
SC= Species of concern (formerly Category 2 candidate for federal listing).
– = No designation.

State classification code:

- E= Listed as endangered under the California Endangered Species Act (ESA).
T= Listed as threatened under the California ESA.
FP= Fully protected under the California Fish and Game Code.
SSC= Species of special concern.
– = No designation.

IMPACT AND ACTIONS

Redevelopment of the main cantonment will cause displacement and relocation of kit foxes and other possible animals living under or near the old abandoned buildings. Mitigation and relocation of the animals will be required prior to project implementation. Increased vehicular traffic will accompany redevelopment. This would make kit foxes more susceptible to vehicle

strikes. Strict enforcement of posted speed limits and permanent or mobile signs identifying kit fox areas for drivers would reduce the possibility of vehicle strikes.

While there are no identified riparian habitats, oak woodlands, or grasslands located on the main cantonment, the redevelopment has the potential to negatively affect species that live or rely on the surrounding habitats. Therefore, redevelopment efforts will need to mitigate the potential impact on surrounding sensitive habitats to less than significant.

Further conservation recommendations for special-status species and habitats can be found in the Camp Roberts INRMP.

CULTURAL / SCIENTIFIC RESOURCES

GENERAL

This section highlights cultural and paleontological resources within the project area of Camp Roberts. These sections are based predominately on work performed by Jones and Stokes Associates, the *Cultural Resource Inventory and Limited Test Excavation Report* for Camp Roberts, and interviews with the Cultural Resource Manager of the Environmental Office at Camp Roberts.

Cultural Resource Management on Camp Roberts is the responsibility of the Cultural Resource Manager. Responsibilities include the coordination with the Advisory Council on Historic Preservation (ACHP) and the California State Historic Preservation Office (SHPO).

CULTURAL RESOURCES

An estimated 10,800 acres of Camp Roberts have been surveyed for culturally historic sites. A total of 43 archeological sites, two bridges, and one bridge remnant have been identified during the surveys. Fourteen of the sites have been determined ineligible for listing on the National Register of Historic Places (NRHP). The remaining 29 sites are therefore potentially eligible for the NRHP and subject to management and protection.

One bridge and the bridge remnant are not eligible for the NRHP. The third bridge has not been evaluated. The bridge is currently in use and maintained by Southern Pacific Railroad. This four-truss steel bridge was built in 1914 and clearly characterizes the historic Southern Pacific Railroad system that has been listed or determined to be eligible for listing in the NRHP. However, the bridge does not belong to the CAARNG and is not part of its preservation responsibility.



Photo 5
SOUTHERN PACIFIC RAILROAD BRIDGE

A potential historical site was discovered just east of the airfield on the East Garrison. The site is identified in the *Cultural Resource Inventory and Limited Excavation Report* for Camp Roberts as JSA-96-ISO-7. The resource discovered is a caramel-colored Franciscan chert secondary flake with some cortex. It is located on a broad alluvial fan and 400 meters west of an unnamed drainage. The site is not listed on the NRHP, but is recommended for further archeological research.

The Spanish trail referred to as the El Camino Real passed through Camp Roberts. The exact location of the trail is unknown and has probably been altered from the original path. El Camino Real, which passes through central California including Camp Roberts, has already been designated as part of the Juan Bautista de Anza National Historic Trail and does not constrain the redevelopment efforts on the main cantonment and East Garrison.

The Soldiers Bowl, located on the western edge of the main cantonment, is among the few structures on Camp Roberts that could potentially be eligible for the NRHP. Completed on 30 August 1941, the bowl was used primarily for entertaining soldiers. Entertainers such as Gene Autry, Desi Arnez, Lucille Ball, Marlene Dietrich, and Joe Lewis performed at the bowl.



Photo 6
SOLDIERS BOWL AMPHITHEATER

The main cantonment and East Garrison were not surveyed for archeological sites due to the amount of pavement. Military features, such as concrete foundations, standing structures, and training facilities, were not recorded.

PALEONTOLOGICAL RESOURCES

Camp Roberts is a documented paleontological site. The main cantonment consists of ancient seabed formations that contain ancient fossils. Fossils have been discovered in the past on Camp Roberts.

IMPACTS AND ACTIONS

There are no registered cultural resources identified on the main cantonment or East Garrison, based on current surveys. The redevelopment of the main cantonment and East Garrison would not negatively impact cultural resources that are currently identified or constrain future development. However, redevelopment on the East Garrison must consider the potential impact on the possible cultural resource site, JSA-96-ISO-7, because of the close proximity to the airfield. Additional restoration efforts should focus on the potentially historic Soldiers Bowl and the proposed retention of the battalion block adjacent to the main gate.

Despite the lack of adverse impact on historical sites, the Cultural Resource Manager should be present to observe and record any potential cultural artifacts that may be unearthed during the redevelopment of the main cantonment and East Garrison.

The possibility of discovering fossils on Camp Roberts does not constrain the redevelopment efforts of the main cantonment and East Garrison; however, during construction and excavation, attention should focus on the possibility of discovering fossils.

AIR QUALITY

GENERAL

Camp Roberts is located in central California within Monterey and San Luis Obispo Counties. The northern section of the installation lies in the North Central Coast Air Basin (NCCAB), which includes the counties of Monterey, Santa Cruz, and San Benito. The southern section of the installation is located in the South Central Coast Air Basin (SCCAB), which includes the counties of San Luis Obispo, Santa Barbara, and Ventura. Air basins are categorized as “attainment” or “nonattainment” for each criterion of air pollutant identified in the Clean Air Act (CAA). The air pollutant criteria establishes acceptable levels for ozone (O₃), carbon dioxide (CO₂), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), and suspended particulate matter (PM₁₀).

AIR QUALITY MANAGEMENT

In addition to the federal CAA regulations, the installation is under the jurisdiction of the California Air Resources Board (ARB) and two local agencies: the Monterey Bay Unified Air Pollution Control District (MBUAPCD) and the San Luis Obispo Air Pollution Control District (SLOAPCD). The state and local agencies have designated both the NCCAB and SCCAB as nonattainment areas for O₃ and PM₁₀. Both Districts have adopted either air pollution control regulations by limiting emissions for stationary and mobile sources or mitigation measures to reduce vehicle emissions. Camp Roberts has existing permits from the MBUAPCD and the SLOAPCD for the two fuel facilities and the MATES paint shop.

The primary sources of air pollutants within the main cantonment and East Garrison are fugitive emissions from liquid fuel dispensing points and small-scale uses of solvents, paints, and cleaning fluids at the maintenance facilities. Efforts to reduce volatile organic compound (VOC) emissions have led to the use of non-VOC solvents and the steam cleaning of vehicle parts by the MATES and OMS.

Fugitive emissions from fuel-dispensing facilities represent a source of air pollutants. The dispensing systems are equipped with vapor recovery units to minimize emissions during refueling operations.

Troop housing is heated by natural gas or electric space heaters and is not considered a major source of emissions.

Asbestos may potentially be released into the air from the demolition or remodeling of older buildings. There may also be asbestos in the removed hot water tanks. Airborne lead particles from peeling lead-based paint on the old buildings could also pose a threat for personnel.

Vehicle miles traveled (VMT) at the installation illustrates the potential for exhaust fumes and generated fugitive dust that may migrate to nearby residents under certain meteorological conditions. The VMT at Camp Roberts is minimal compared to the VMT for the two counties. San Luis Obispo has expressed concern over dust emissions when tanks traverse the Salinas River. Currently, Camp Roberts does not have a management program to reduce the VMT by personnel and equipment.

Existing sources of air pollution at Camp Roberts include stationary, mobile, and fugitive sources. The following table lists the various sources and pollutants.

Table 5
SOURCES OF AIR POLLUTION AT CAMP ROBERTS

Source	Pollutant
Stationary Sources	
Fuel-dispensing facilities	Various hydrocarbons
Existing painted buildings and insulated pipes	Asbestos, lead
Landfill	Methane, carbon dioxide, trace gases (nitrogen, oxygen, and reactive organic compounds)
Wastewater treatment plant	Hydrogen sulfide, sulfur oxides, odorous gases (ammonia, and reactive organic gases)
MATES Paint Shop	Volatile Organic Compounds (VOCs)
Mobile Sources	
Aircraft	Carbon monoxide, sulfur oxides, nitrogen oxides, reactive organic gases
Motor Vehicles	Carbon monoxide, nitrogen oxides, reactive organic gases, particulate matter (PM10)
Fugitive Sources	
Cantonment areas	Fuel, paints, cleaning fluids, PM10
Training activities	PM10

IMPACTS AND ACTIONS

Redevelopment will increase the amount of PM10 within the cantonment area, especially during construction. Camp Roberts needs to follow the air quality guidelines as outlined by Monterey and San Luis Obispo counties to decrease the possible impact.

Redevelopment of the cantonment areas will lead to additional vehicle movement, thus increasing the amount of vehicle exhaust. Land use planning and alternative modes of transportation within the cantonment areas will reduce the potential negative impact on the region's air quality.

NOISE

GENERAL

California Government Code 65302(f) requires local General Plans to include noise elements to identify and appraise noise problems in communities. The major noise sources in the Camp Roberts area include Highway 101, the Southern Pacific Railroad line, aircraft overflights, and activities on the installation. Noise generated within the main cantonment and East Garrison at Camp Roberts can be attributed to transportation-related sources, such as motor and tactical vehicles and aircraft.

The County Noise Elements include specific land use compatibility guidelines and recommendations for land use development decisions. In general, noise levels below 60 dbA Ldn are acceptable for residential areas, 60 to 70 dbA Ldn is generally acceptable for commercial properties, and 70 to 75 dbA Ldn is acceptable for industrial land uses.

INSTALLATION COMPATIBLE USE ZONE (ICUZ) PROGRAM

The ICUZ program provides a means of analyzing noise exposure and achieving compatible land uses between the National Guard's needs and civilian communities. Under the ICUZ program, three noise zones (I, II, III) are designated based on Ldns. The figure below depicts the noise zones that traverse the site.

ICUZ Zone I

Housing, schools, medical facilities, and other noise-sensitive land uses can be located in this zone.

A - weighted day-night sound level < 65 decibels (dB)

C - weighted day-night sound level < 62 dB

Less than 15 percent of the exposed population are highly annoyed by noise levels.

ICUZ Zone II

Noise-sensitive land uses (e.g., housing, schools, medical facilities) are normally unacceptable in this zone.

A - weighted day-night sound level 65 to 75 dB

C - weighted day-night sound level 62 to 70 dB

Approximately 15 to 39 percent of the exposed population are highly annoyed by noise levels.

ICUZ Zone III

Noise-sensitive land uses (e.g., housing, schools, medical facilities) are unacceptable in this zone.

A - weighted day-night sound level > 75 dB

C - weighted day-night sound level > 70 dB

More than 39 percent of the exposed population are highly annoyed by noise levels.

The results of the ICUZ survey revealed that artillery explosions on the ranges and aircraft produce the majority of noise on the installation. The survey also revealed that Zone II and III noise contours extend outside the installation's boundaries. Zone III is almost entirely contained within the installation boundary, except for several small areas along the northwestern, eastern, and southeastern boundaries. Zone II also extends outside installation boundaries and transects the main cantonment area. There are no noise-sensitive receptors located within Zone II or III contours, including off-post land uses. Noise generated from the main cantonment and East Garrison does not negatively impact the surrounding communities.

IMPACTS AND ACTION

The redevelopment of the main cantonment is not anticipated to produce a significant negative impact on the surrounding communities. There will be additional noise created during the construction phase, but this will not require mitigated action to reduce noise levels.

Noise generated from the impact zones and other ranges at Camp Roberts will not constrain future land uses or facilities on the main cantonment or East Garrison.

HAZARDOUS / TOXIC MATERIALS AND HAZARDOUS WASTE

GENERAL

A number of activities on the main cantonment and East Garrison at Camp Roberts require the use of hazardous materials and the generation of hazardous waste. Activities include vehicle maintenance, facility and building maintenance, pest and weed control, and medical operations. Hazardous materials are used for operations at OMS #21, MATES, DFE, and the wastewater treatment plant. Hazardous waste includes PCB-containing transformers, asbestos, lead-based paint materials, pesticide containers, medical waste, solvents, and other hazardous fluids.



Photo 7
OLD TRANSFORMER CONTAINING PCBS

Information about hazardous materials and waste management can be found in Camp Roberts Hazardous Management Plan, the Spill Prevention Control and Countermeasures (SPPC) plan, and Installation Spill Contingency Plan (ISCP).

INSTALLATION RESTORATION PROGRAM (IRP) / CONTAMINATED SITES

During removal of inactive USTs a leaking tank was discovered near building 936 in the DOL complex. Remediation of the site for fuel contamination was completed in 1998 and certified by San Luis Obispo County. Remaining contamination is suspected to be contained within a perched aquifer above the Paso Robles Groundwater Basin. Due to the seismic activity in the area, a potential contamination hazard exists if the perched aquifer cracks from an earthquake and contamination migrates into the underlying basin.

Sampling and monitoring wells located up and down gradient of the active landfill and the adjacent inactive portions indicate the landfill is leaking leachate. The Solid Waste Assessment Test (SWAT) Final Report of May 1991 identifies the landfill for leaking volatile organic compounds (VOCs) and synthetic semi-organic compounds (SVOCs) and metals. Metals and SVOCs have been detected in groundwater, and several VOCs and metals have penetrated the

vadose zone. Bis (2-ethylhexyl) phthalate and aluminum exceed primary maximum contamination levels (MCLs), and iron and manganese exceed secondary MCLs in groundwater.

According to the Environmental Office at Camp Roberts, there are no known buried hazardous materials in the main cantonment or East Garrison. However, the developed area has the potential to contain excessive amounts of lead and possible asbestos due to the dilapidating conditions of the buildings. The buildings were painted with lead-based paint and have asbestos in insulation around water heaters and pipes



Photo 8
BUILDINGS SCHEDULED FOR DEMOLITION

UNDERGROUND STORAGE TANKS (UST) / ABOVEGROUND STORAGE TANKS (AST)

There are nine USTs that are used to store bulk fuel at Camp Roberts. They are located along the southern edge of the main cantonment's parade field and at the MATES. Federal law and regulations require that all USTs containing hazardous materials be registered with the Environmental Protection Agency (EPA) and include leak detection systems. Camp Roberts has registered all appropriate USTs with the EPA. In addition, all active tanks are double walled and equipped with interstitial leak-detection monitoring devices.

All known inoperative USTs have been excavated and removed. One site is known to have leaked requiring remediation (refer to IRP section). The remaining UST sites were analyzed for possible contamination to the soil and groundwater. All tests were negative or below the levels requiring action.

In addition to underground fuel tanks, heavy expanded mobility tactical truck (HEMMT) refuelers park on unpaved surfaces. This creates potential contamination to soil and groundwater.

All ASTs on the installation are registered with the state and have secondary containment in case of an accidental spill. The tanks are used to store hazardous materials and waste, as well as bulk fuel.



Photo 9
UNPAVED FUEL TANKER PARKING AREA

HAZARDOUS WASTE DISPOSAL

Hazardous waste is stored in two locations on the installation: OMS #21 and the MATES. The waste is stored in ASTs with secondary containment or in 55-gallon drums in a hazardous material building. The MATES is considered a large quantity waste generator and a 90-day satellite collection point. Most waste is disposed of through a statewide hazardous waste recovery / recycling program with private disposal companies for waste oil, lead-acid batteries, and antifreeze. Other private contractors dispose of the remaining hazardous waste after coordination between the United States Property and Fiscal Office (USPFO) and Defense Reutilization Marketing Office (DRMO).

Demolition of the old structures will create a large amount of hazardous waste. Old transformers containing PCBs and old water heaters insulated with asbestos are considered a hazardous waste and require proper disposal. Additionally, the lead-saturated wood from the paint on the old structures is hazardous and requires proper disposal. There is a potential that the topsoil may contain hazardous levels of lead from paint and asbestos from insulation. The hazardous materials encountered during demolition will be disposed of properly by the contractor at the time of removal.

IMPACTS AND ACTION

Due to the large amount of hazardous materials / waste present on the installation, a potential exists for the release of hazardous materials or waste into the environment. Camp Roberts needs to continually oversee and develop management plans for hazardous materials / waste. Plans should include but not be limited to the following:

- Regularly update hazardous management plans and prevention measures.
- Follow guidelines for good housekeeping practices.

- Continually screen the facility for contamination from past uses and remediate discovered contaminated sites.
- Outline methods for proper disposal methods.
- Manage hazardous material storage tanks.
- Obtain and update all pertinent permits and all appropriate spill and prevention plans that are required to comply with state and federal regulations.
- Properly dispose of the waste generated from the demolition of older buildings (e.g., lead-based paint on timbers from buildings).

Although the landfill does not lie on the main cantonment, the redevelopment of the area and additional waste added to the landfill could potentially increase the rate of the migrating leachate. Camp Roberts needs to continually monitor the migrating leachate and take appropriate actions if the contamination rate increases.

CONSTRAINTS AND OPPORTUNITIES

GENERAL

Camp Roberts is one of the few remaining training sites located in a remote area of the continental United States. Operations of the CAARNG on the camp cannot train without environmental and operational constraints. The terrain of the installation has an abundance of natural features, native plants, wildlife, and cultural and historical resources. The military mission works in conjunction with the management of natural and cultural resources. However, conflicts between the military mission and the Endangered Species Act, the Sikes Act, or any other law associated with natural resources conservation will be resolved according to statutory requirements.

NATURAL CONSTRAINTS

Natural constraints consist of environmental factors that may limit or restrict the redevelopment discussed in the Master Plan. Typical natural constraints include floodplains, special-status species, and geological features. The following natural constraints were identified for the Camp Roberts Master Plan.

NATURAL FLOODPLAIN

Camp Roberts lies within the Salinas River watershed basin. The Salinas and Nacimiento Rivers are within the project area and influence the proposed redevelopment. The confluence of the Salinas and Nacimiento Rivers is just north of the north access gate and separates the East Garrison from the main cantonment.

The proposed redevelopment of the main cantonment and East Garrison are not impacted by the 100-year floodplain, but it does pose a severe constraint for land use along the riverbanks. Currently, the floodplain does not affect any developed areas.

NATURAL WETLANDS AND BUFFERS

Wetlands are considered a severe constraint. Protection and conservation of existing wetlands is crucial for compliance with Executive Order 11990. There are no identified wetlands on the developed areas or on the proposed future redevelopment sites; however, the potential impact of adjacent wetlands needs to be addressed and reduced to an insignificant level. To reduce negative impacts, a 100-foot protection buffer will be placed around all existing wetlands. Specific land use and development within the protection buffer will be limited and moderately constrained.

NATURAL SOIL CONDITIONS AND ERODIBILITY

Soil conditions pose a constraint to future building locations and potential land uses. Highly erodible soils are located on hillsides and drainage courses that pose a moderate constraint on future redevelopment. The following table lists potential constraints for the various soil types located on the project area.

Table 6
SOIL CHARACTERISTICS

Soil Types	Shrink – Swell Potential	Foundation for Small Buildings	Road Location	Bivouac Sites	Remarks
Lockwood Shaly Loam	Low-Moderate	Moderate (a)	Low	Low	Best soil for overall engineering use.
Chular-Arbuckle Complex	Low	Low	Low	Low	Best soil for overall engineering use.
Placentia Complex	Low	Low	Low	Low	Best soil for overall engineering use.
Arbuckle-Positas Complex	Moderate	Moderate (h)	Moderate (a,h,t)	Moderate (h)	Soils of this type are stable under good vegetation cover, but are moderately to highly erodible when disturbed.
Greenfield – Fine Sandy Loam	Low	Low	Low	Low	Best soil for overall engineering use.
Garey Complex	Low	Low	Low	Low	Best soil for overall engineering use.
Metz Complex	Low	Severe (f)	Severe (f)	Severe (f)	Soils of this type are undesirable for construction sites.
Riverwash	Low	Severe	Severe	Severe	Soils of this type are undesirable for construction sites.

INSERT FIGURE 4
NATURAL CONSTRAINTS

Table 6
SOIL CHARACTERISTICS

Soil Types	Shrink – Swell Potential	Foundation for Small Buildings	Road Location	Bivouac Sites	Remarks
Linne Complex	Low	Moderate (h)	Moderate (h,t)	Low	Soils of this type are stable under good vegetation cover, but are moderately to highly erodible when disturbed.
Nacimiento Silty Clay Loam	Moderate	Moderate (a,h)	Moderate (a,h,t)	Low	Soils of this type are stable under good vegetation cover, but are moderately to highly erodible when disturbed.
Elder Gravelly Loam	Low	Low	Low	Low	Best soil for overall engineering use.
Badland	NA	NA	NA	NA	None
Sorrento Clay Loam	Moderate	Moderate (a,h)	Moderate (a,t)	Low	Soils of this type are stable under good vegetation cover, but are moderately to highly erodable when disturbed.
Balcom-Nacimiento	NA	NA	NA	NA	None

a - high shrink – swell potential

f - floods

h - slope

t - low strength

SPECIAL - STATUS SPECIES AND HABITAT

Generally, special-status species are associated with habitats that enjoy special protection as unique and threatened habitats. The Master Plan recommends that setting aside natural habitats and adjacent buffer zones as land management protect sensitive natural areas and species and conservation preserves. In addition, the master plan attempts to link sensitive habitats used by special-status species on Camp Roberts to wildlife areas outside the camp boundaries, such as the Big Sandy Wildlife Area.

The main cantonment and the East Garrison are characterized as barren or void of any natural habitat. In spite of that, endangered species, such as the San Joaquin kit fox and the vernal pool fairy shrimp, have adapted to live and forage in the abandoned buildings and portions of the main cantonment. Natural habitats that encompass and constrain the redevelopment include grasslands, oak woodlands, and riparian. The constraints can be mitigated with good planning and design. Therefore, the constraint is only considered moderate.

NATURAL SEISMIC ACTIVITY

Camp Roberts is located in a highly-active fault zone. The San Andreas Fault lies approximately 20 miles to the east, and the Riconda fault system lies to the west. The region is capable of generating an earthquake of magnitude 7 or greater on the Richter Scale. Construction of new buildings and retrofitting of older structures are constrained moderately by seismic activity. The 1988 Uniform Building Code Seismic Zone Map locates the camp in Zone 4, the highest risk zone. Alluvial sandy soil in the floodplain of the Salinas and Nacimiento Rivers may be prone to liquefaction. Seismic activity is a moderate risk for redevelopment efforts.

NATURAL OPEN SPACE / RESTORATION AREA BUFFERS

Areas included in this constraint are the ongoing ecological restoration efforts for the 7000 block, the natural drainage route / open space between the DOL complex and the battalion blocks, and the route between the MATES and airfield on the East Garrison.

Buffers around open space and restoration areas limit the siting of certain types of land uses. For example, maintenance activities and fuel storage and dispensing points should not be sited in close proximity to these areas without a proper buffer. Land uses, such as recreational facilities, are recommended for location adjacent to open space and buffers.

MANMADE CONSTRAINTS

Manmade constraints consist of mainly operational aspects that affect the location of future buildings. Typical constraints include cultural resources, contaminated sites, and fuel storage sites.

CULTURAL RESOURCES. There are three cultural resources identified in the project area. The Soldiers Bowl is not listed on the NRHP, but is being considered. A portion of the battalion block near the main gate is being proposed for restoration to preserve the history of the camp. East of the East Garrison, a Franciscan chert was discovered, and the area is recommended for further study. It is the responsibility of the federal agency to protect or preserve suspected historical and archeological sites. Cultural resources pose only a low constraint on redevelopment.

CONTAMINATED SITES (ASBESTOS AND LEAD CONTAMINATION). Dilapidated WWII buildings throughout the project area contain hazardous materials, such as lead- based paint and asbestos. Potential contamination of the soil could constrain redevelopment efforts and future land uses. Proper cleanup efforts will negate any significant contamination that may limit redevelopment potential. Thus, the old WWII buildings and the hazardous waste are considered moderate.

MALODOROUS FACILITIES. Malodorous facilities, such as the sewage treatment plant, restrict certain types of adjacent land uses. The plant is located in an isolated part of the camp next to the Salinas River and poses a low constraint on future redevelopment.

INSERT FIGURE 5
MANMADE CONSTRAINTS

LIMITERS

Limiters consist of a combination of environmental and operational constraints that serve to define and limit areas upon which future development can occur. Limiters identified for the main cantonment and East Garrison at Camp Roberts include the following.

INSTALLATION COMPATIBLE USE ZONE (ICUZ) NOISE CONTOURS.

The ICUZ program provides a means of analyzing noise exposure and achieving compatible land uses between the National Guard's needs and civilian communities. Under the ICUZ program, three noise zones (I, II, III) are designated based on L_{dn}s. Zone II is the only zone affecting redevelopment within the project area. The following description identifies appropriate land uses and sensitive land uses within this zone.

Noise-sensitive land uses (e.g., housing, schools, medical facilities) are normally unacceptable in this zone.

A - weighted day-night sound level 65 to 75 dB

C - weighted day-night sound level 62 to 70 dB

15 to 39 percent of the exposed population are highly annoyed by noise levels.

Since no sensitive land uses are proposed within the project area, noise constraints are considered low. All proposed land uses are considered acceptable by ICUZ standards within the project area.

AIR OPERATIONS CLEARANCE ZONES. Air operations clearance zones are set aside and maintained free of obstructions to air navigation in order to ensure safe aviation operations. The clearance zones establish ground-level clear zones at the airfield and reserve the airspace required for safe approaches and departures. The airfield safety clearances are based on the type of aircraft supported, the Class of the airfield, whether the airfield operates under visual flight rules (VFR) or is rated for instrument flight rules (IFR), the configuration of the airfield, and local conditions that impact flight operations. The air operations clearance zones are based on standard criteria found in Technical Manual (TM) 5-803-4, *Planning of Army Aviation Facilities*.

Air operations clearance zones are associated with rotary-wing air operations at the Camp Roberts Army Airfield (AAF). The Camp Roberts AAF is assumed to be a VFR facility.

The airfield safety clearances include:

- Primary surface
(300 feet wide, length determined by airfield length plus 75 feet overruns)
- Takeoff safety zone
(first 400 feet beyond primary surface, defined by a trapezoidal fan at an 8:1 slope ratio)
- Approach-departure clearance surface
(begins at takeoff safety zone and extends to 1,200 feet beyond primary surface, defined by a trapezoidal fan at an 8:1 slope ratio, widening from 300 feet at primary surface to 600 feet at the 1,200 foot outer limit)
- Approach-departure zone
(area defined by area under the takeoff safety zone and approach-departure clearance surface)

- Transitional surface
(transverse area extending laterally at a 2:1 slope ratio from primary surface to an altitude of 150 feet above the mean sea level (MSL) altitude above the airfield surface, extending to the ends of the approach-departure zone)

For the purposes of the constraints analysis, the airfield safety clearances are assumed to totally preclude development. Therefore, the RPDP will recommend reservation of these safety clearance zones through land use designation as restricted open space.

RISK MANAGEMENT. Industrial facilities at MTC Camp Roberts, such as the MATES and the wastewater treatment plant, pose specific risk management challenges should a release of toxic materials occur. The MATES and wastewater treatment plant are constrained by safety zones associated with overpressure endpoint / initial isolation radii for both propane and chlorine. In addition, a downwind evacuation zone has been established for chlorine releases. The evacuation zone covers the southern half of the main cantonment.

The safety zones and evacuation zone associated with premature or uncontrolled releases of chlorine do not pose severe limitations on future development. Rather, the safety zones may be viewed as a moderate constraint and the evacuation zone as a slight constraint to development. The RPDP recognizes that risk management concerns must be addressed through future planning, and these concerns are reflected in the limiters analysis. The future development plan concept also reflects risk management considerations.

BUFFER ZONES

Proper buffer zones established around flammable / explosive tanks or containers are to promote the safety of life and property on the installation. Flammable / explosive materials include the natural gas pressure-reduction point and the fuel storage facilities on the main cantonment and East Garrison. Guidelines adopted for buffer zones will limit certain land uses and structures in the immediate vicinity. The constraint on redevelopment is classified as low. Inhabited buildings will be constructed no closer than the minimum distance determined by the identified minimum distance for the buffer zone. The following table identifies the minimum distance for an inhabited building depending on the flammable / explosive material.

Table 7
BUFFER ZONES

Flammable / Explosive Material	Minimum Distances (in feet)	
	Aboveground Storage Container	Underground Storage Container
Vehicle Fuel < 500 gallon container	50	25
Vehicle Fuel > 500 gallon container	100	50
Natural Gas	100	NA

Buffer zones around the operating facility shall be kept free of tall grasses, weeds, trash, or other combustible materials.

INSERT FIGURE 6
LIMITERS

CONSTRAINTS COMPOSITE

This subsection outlines the constraints and opportunities for the Camp Roberts Master Plan. The constraint composite is compiled of existing environmental and operational conditions for the project area at Camp Roberts. For the purpose of this Master Plan, only areas situated on, near, or potentially impacted by the redevelopment of the main cantonment and East Garrison will be analyzed. Constraints have been divided into the following three levels:

Low – relatively free of limitations, or limitations are easily overcome.

Moderate – limitations can be overcome with good planning and / or careful design.

Severe – limitations are serious and difficult to overcome.

The following table illustrates the environmental and operational conditions that influence the future development plans and land use at Camp Roberts.

Table 8
CONSTRAINTS COMPOSITE

Constraints	Type	Rating
Natural		
	100-year Floodplain	Severe
	Wetlands	Severe
	Wetland Protection Buffers	Moderate
	Soil Conditions and Erodibility	Low – Severe
	Special-status Species and Sensitive Habitat	Moderate
	Seismic Activity	Moderate
	Open Space / Restoration Area Buffers	Moderate
Man-Made		
	Cultural Resources (Historical Sites)	Low
	Asbestos and Lead Contaminated Buildings	Moderate
	Sewage Treatment Plant	Low
Limiters		
	ICUZ Noise Contours	Low
	Air Operations Clearance Zones	Severe ^a
	Critical Slope Analysis	Severe
	Buffer zones	Low

^a Development is not permitted within the clearance zones.

OPPORTUNITY SITES

The opportunity sites for Camp Roberts were determined from the constraints composite table. The composite ratings were used to identify the sites best suitable for future redevelopment. Sites determined to have the potential for redevelopment are identified in the following figure.

In addition, sites designated for management / conservation are also shown. These sites are designated to promote the Camp Roberts environmental stewardship program through the preservation and restoration of land that can serve as buffers, corridors, mitigation measures, or other environmental preservation uses.